Use of MODIS Snow-Cover Maps for Detecting Snowmelt Trends in North America

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Abstract

Research has shown that the snow season in the Northern Hemisphere has been getting shorter in recent decades, consistent with documented global temperature increases. Specifically, the snow is melting earlier in the spring allowing for a longer growing season and associated land-cover changes. Here we focus on North America. Using the Moderate-Resolution Imaging Radiometer (MODIS) cloud-gap-filled standard snow-cover data product we can detect a trend toward earlier spring snowmelt in the ~12 years since the MODIS launch. However, not all areas in North America show earlier spring snowmelt over the study period. We show examples of springtime snowmelt over North America, beginning in March 2000 and extending through the winter of 2012 for all of North America, and for various specific areas such as the Wind River Range in Wyoming and in the Catskill Mountains in New York. We also compare our ~12-year trends with trends derived from the Rutgers Global Snow Lab snow cover climate-data record.

Poster presentation requested.